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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
WERNER, BRIAN P	

ART UNIT	PAPER NUMBER
2621	21

DATE MAILED: 04/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/848,479	GUEST ET AL.	
	Examiner	Art Unit	
	Brian P. Werner	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *73-98* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *73-98* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The Office Action is responsive to the remarks advanced in paper number 14, received on September 8, 2003, and to the claim amendments of paper number 20, Amendment E, received on January 21, 2004. While the remarks of paper number 14 are directed to "claims 1 through 26" (paper 14, page 7, line 19), claims 1-26 are equivalent to currently pending claims 73-98.

Claim Objections

2. The following quotations of 37 CFR § 1.75(a) and (d)(1) are the basis of objection:

> (a) The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.
>
> (d)(1) The claim or claims must conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description. (See § 1.58(a)).

3. Claim 98 is objected to under 37 CFR § 1.75(a) and (d)(1) as failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention or discovery, and failing to conform to the invention as set forth in the remainder of the specification.

Claims 98 recites "selecting two or more reference images" for "combining". While this is supported and clear, the statement in line 2 of the claim "where each

difference image is selected ..." is unclear and unsupported. According to the disclosure, "difference images" are not selected for combining, but rather "reference images" are selected. Difference image are used only to select the reference images. Therefore, the following will be assumed for examination purposes:

Claim 98, line 2: "selecting two or more reference images, where each reference [difference] image is selected ...".

The manner in which claim 98 is currently recited raises an issue of clarity as well as antecedent basis for the subject matter in the specification.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 73-98 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 26 of U.S. Patent No. 6,252,981 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 73-98 of the instant application are fully

anticipated by the patented claims, and in many cases recite the same limitations with minor variations of language. For example, claim 73 of the instant application is fully anticipated by claim 1 of the patent, claim 76 of the instant application is fully anticipated by claim 4 of the patent, etc. A claim-by-claim and limitation-by-limitation analysis shall not be provided, as it is clear that the variations between the currently pending claims and patented claims are minor, and this rejection is easily and conveniently overcome by a timely filed terminal disclaimer.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 73-75, 79-81, 90-92 are rejected under 35 U.S.C. 102(e) as being anticipated by Sumie et al. (US 5,943,437 A).

Regarding claims 73, 79-81 and 90-92, Sumie discloses selecting a reference die ("the reference image" at column 7, line 50) comprising:

a die image comparator (figure 6, numeral 3a) creating a difference image by subtracting ("difference is calculated pixel by pixel" at column 5, line 31; figure 7,

numeral S2) a first die image ("reference image" at column 5, line 29) and a second die image ("inspection image" at column 5, line 28); and

a difference image analysis system (figure 6, numeral 4; figure 7, numeral S4-S5; as part of the analysis, "position" and "type" of defects are output at column 8, lines 61-68) determining whether the first die image and the second die image may be used as the reference die without using a pre-stored reference die image ("when an image of the semiconductor wafer 1 in a position where no defect exists is further picked up to use as a reference image, the 'position including no defect' which is output from the defect inspection apparatus may be used for he image pickup operation as the position of the reference image" at column 9, lines 1-5); and

storing the reference die image in a memory (the reference image is stored in memory 3c of figure 6).

That is, Sumie relies upon a "reference image" of a semiconductor die for comparison with an inspection image for purposes of determining a defect in the inspection image. The reference image is stored in memory 3c of figure 6. Sumie discloses how the reference image is selected at column 7, lines 50-56, wherein he states, "the reference image data ID_c to be stored in the image memory 3c of the image processor 3 ... may be data of an image obtained by picking up an image of a portion of the surface of the semiconductor wafer where there is no defect". Phrased differently, Sumie states that "when an image of the semiconductor wafer 1 in a position where no defect exists is further picked up to use as a reference image, the 'position including no defect' which is output from the defect inspection apparatus may be used for the image

pickup operation as the position of the reference image" at column 9, line 1. Thus, Sumie performs an inspection operation on the wafer in order to determine a position on the wafer where a defect free reference image can be found, and then uses the defect free image as the reference image. Sumie discusses how this is done, specifically in relation to the inspection of semiconductor dies, at column 8, lines 46-60. Sumie states, "in the case of a semiconductor wafer on which the same construction (die) repeatedly appears, a defect portion can be extracted by comparing the pieces of luminance ... of the dies with each other" at column 8, line 50. Regarding the comparison of at least two dies for purposes of determining if a defect exists, Sumie states, "when the same part of three dies is extracted by the inventive method, if the pieces of luminance information ... substantially agree within a specified tolerance, no defect is determined to exist in the test regions of the three dies" and if the luminance "extracted from one die differ from those extracted from the remaining two dies, a defect exists in the test region of this one die" at column 8, line 58. Thus, Sumie compares at least two die images, as called for by the claims [i.e., the claims are open ended], in order to determine whether a defect exists, and then uses a defect free dies as the reference image.

Regarding claim 74, Sumie disclose an imaging system creating a digital image (figure 6, numeral 2).

Regarding claim 75, the Sumie stores the die images at figure 6, numerals 3b and 3c.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 90-92 and 98 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Sumie et a. (US 5,943,437 A) and Schemmel et al. (US 5,943,55a A).

Sumie discloses selecting a reference die as described in the 102 rejections above.

Regarding each of the above claims, while Sumie selects a defect free die as a reference die based on the comparison of at least first and second die images as already described, Sumie does not teach storing and then combining the acceptable first and second die images to form the reference die image.

Schemmel discloses system in the same field of die inspection ("detection of defects in individual silicon chips" at column 1, line 8), and same problem solving area of forming a reference die ("... create a statistical die model or "standardized" silicon chip matrix" at column 5, line 40; "statistical die model" at column 8, line 33), comprising combining first and second die images to form the reference die image ("a statistical die model matrix is obtained" and "mean gray scale values for each neighborhood of pixels" at column 8, lines 33-38; at least two [i.e., first and second] dies images are statistically

combined to form a die model, which is subsequently compared with the remaining chips on the wafer under test; also refer to column 5, lines 35-55 and column 6, lines 14-45).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the manner in which Sumie forms his reference die image by forming a statistical die model of a plurality of dies as taught by Schemmel. That is, Sumie (as described above) finds a defect free die to use as a reference by comparing at least first and second dies on a same wafer. When both dies images agree with one another, both are deemed acceptable (i.e., defect free) and one is used as the reference. This ensures that only defect free images are used as a reference. While this is beneficial, as modified by the teaching of Schemmel, it would have been obvious to combine those die images found to be defect free by Sumie to form a statistical die model (i.e., instead of selecting just one of those dies as the reference as is taught by Sumie) in the manner taught by Schemmel. One would be motivated to form a statistical die model as taught by Schemmel to solve "the problem caused by the inherent defects of CCD cameras" (Schemmel, column 6, line 35), to "increase the resolution of the scan" and factor "in the differences in the background contrast of the silicon wafers" (Schemmel, column 6, lines 58-63), as well as accounting for and being robust against "different batches of silicon wafers" (Schemmel, column 10, line 55), in addition to many other motivating factors described throughout the Schemmel references.

Note: Regarding each of the above claims, it would have also been obvious to modify Schemmel according to the teaching of Sumie. That is, Sumie teaches the concept and comparing dies on a wafer to find defect free dies, and using only a defect free die as a reference for subsequent comparisons. It would have been obvious to utilize only known good dies based on the comparison of Sumie, in order to form the statistical die model of Schemmel, thereby ensuring that defective dies do not contribute to and otherwise taint Schemmel's statistical die model so that the die model is an accurate representation of a good, defect free die.

10. Claims 76, 82, 83, 86, 87 and 93 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Sumie et a. (US 5,943,437 A) and Miyazaki (US 6,031,607 A).

Sumie discloses subtracting first and second die images ("difference is calculated pixel by pixel" at column 5, line 31) as applied to claims 73, 81 and 90 above.

Regarding claims 82, 86 and 93, Sumie does not disclose creating a histogram from the image brightness data.

Regarding claim 76, 83, 87 and 93, Sumie does not disclose the difference image analysis comprising a slope detector determining whether the slope of a histogram changes from negative to positive.

Miyazaki teaches all of these elements. Miyazaki discloses a semiconductor wafer inspection system ("defect inspection system" at column 1, line 7) comprising defect detection circuitry that analyzes a difference image ("difference image is formed"

at column 14, line 64) by generating histogram data from the difference image ("difference image providing the brightness histogram" at column 15, line 6; figures 17 and 18) and analyzing the slope of the histogram data to identify a region over which the slope of the histogram changes (first, the initial slope on the dark end of the histogram is analyzed; i.e., "the amount of the slope of this line is calculated to obtain the absolute value" at column 15, line 4; then, a threshold is set in dependence on this slope as described at column 15, line 42-50, and a "portion brighter than a given uniform brightness (threshold value) is recognized as a defect" at column 15, line 34; in the context of this quote, and looking at figure 17 for example, the brightness peaks that appear in the histogram at areas that are greater than threshold "P1" are regarded as defects, or potential defects; if there were no peaks greater than P1, and thus no slope changes after the initial slope, then the difference image would be considered defect free; the peaks appearing in figure 17 that are greater than P1 are changes in the histogram slope, and represent potential defects, thus meeting the claim requirements).

It would have bee obvious at the time the invention was made to one of ordinary skill in the art to analyze the difference image Sumie, using the histogram techniques as taught by Miyazaki, in order to determine whether a defect exists in one of the dies, and thereby gain the benefit of the Miyazaki analysis which "permits the individual setting of threshold value for portion of much noise and portion of less noise, producing the pattern defect inspection with high accuracy and enlarging the object of inspection" (Miyazaki, column 15, line 55).

11. Claim 98 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sumie et al. (US 5,943,437) in view of Khalaj et al. (US 5,513,275).

Sumie discloses subtracting first and second die images ("difference is calculated pixel by pixel" at column 5, line 31) as applied to claim 90 above.

While Sumie requires the formation of a reference image ("the reference image ... to be stored" at column 7, line 50), Sumie does not describe combining two or more die images to form a reference image.

Khalaj discloses a die inspection system (column 2, lines 45-55) comprising combining two or more die images to form a reference image by "averaging among all of the blocks in image" at column 6, line 53, where "the amount of noise and the effect of the defects are reduced considerably" at line 54.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Sumie system according to the Khalaj teaching, by averaging multiple defect free dies in order to form the "reference image" required by Sumie, thereby reducing the effect of noise, and smoothing out the effect of defects in the dies, thereby providing a more accurate, defect free reference image.

12. Claims 78, 96 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sumie et al. (US 5,943,437) in view of Berezin et al. (US 5,539,752).

Sumie discloses subtracting first and second die images ("difference is calculated pixel by pixel" at column 5, line 31) as applied to claims 73 and 90 above.

While Sumie requires an analysis of the difference image ("agree within a specified tolerance" at column 8, line 56), Sumie does not teach the calculation of defect density.

Many types of "tolerances" are well known in the art of manufacturing inspection, and specifically wafer inspection, including tolerances for defect density. Berezin discloses semiconductor wafer inspection (figure 1) wherein Berezin teaches providing a warning when "defect density, or number of defects per die, exceeds preselected parameters" at column 3, line 52, such as "when the number of defects of a certain defect type for a given die exceed a threshold value, or when the defect density for a certain defect type exceeds a threshold value, thereby indicating yield-detracting operations of the manufacturing process" at column 5, lines 5-13.

It would have been obvious a the time the invention was made to one of ordinary skill in the art to include a tolerance for "defect density", as one of the "specified tolerances" required by Sumie, in order to flag potential defects between dies, and to flag yield-detracting operations of the manufacturing process so that the operator can take corrective action.

13. Claims 76, 82-89 and 93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sumie et al. (US 5,943,437) in view of Brecher et al. (US 5,544,256).

Sumie discloses subtracting first and second die images ("difference is calculated pixel by pixel" at column 5, line 31) as applied to claims 73, 81 and 90 above.

While Sumie requires an analysis of the difference image ("agree within a specified tolerance" at column 8, line 56), Sumie does not teach determining unacceptable data by forming a histogram of the difference image, and determining a negative to positive slope change.

Brecher discloses a system for wafer defect detection and classification (figure 1) comprising determining unacceptable data by forming a histogram (figure 15) of a difference image ("distribution of pixel in the difference image [original image minus golden template]" at column 13, lines 25-30), and determining a negative to positive slope change (Brecher determines the values $\Delta_{positive}$ and $\Delta_{negative}$, which are the average values of the positive and negative difference distributions as seen at figure 15 and described at column 13, lines 35-45. The "average" values exist right at the center of the distributions where the slopes changes from negative to positive. Brecher uses these values to determine an "interior contrast magnitude" at column 13, line 38, which is a "measurement for a defect in a patterned semiconductor wafer" at column 14, line 11, as listed in Table 5, at column 15. In addition, Brecher uses this technique to decide whether a "defect is dark or light" (column 13, line 5) in order to classify the defect (column 4, lines 35-50), as defect classification has become an "essential part" of the manufacturing process "where defect detection is critical", as "classification provides the information necessary to correction process or production problems" (column 1, lines 15-25; also refer to columns 14-15).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the histogram technique taught by Brecher, in order to both

determine the existence of a defect in the difference image of Sumie, and to classify the defect thereby providing information necessary to correct production problems. Regarding claims 84, 85, 88 and 89, Brecher further determines defect size and density (see Tables 1 and 3) and it would have been obvious to utilize these parameters in the determination and classification of defects in the Sumie defect image for the same reasons and motivation.

14. Claims 77, 94 and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Sumie et a. (US 5,943,437 A) and Michael (US 5,640,200 A).

Sumie does not teach a size detector for determining whether a size of an anomalous region exceeds a predetermined allowable size.

Michael discloses a system in the same field of optical inspection (figure 7) and same problem solving area of determining defects in a difference image (see "difference image" at column 10, line 21) comprising the determination of a defect size within the difference image ("defect size" at column 15, line 60; "measuring ... area" at column 16, line 30; see equations 10a and 10b at line 45). Michael states that use of geometric criteria, such as size and area, impose "additional criteria to prevent false alarms" (column 15, line 58).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to impose size as a defect criteria as taught by Michael, for the determination of potential defects on a die as identified by the difference image of

Sumie, in order to impose additional criteria for determining a defect to prevent false alarms, and the false determination of a defect in an otherwise good wafer die.

15. Claims 94 and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Sumie et a. (US 5,943,437 A) and Schemmel et al. (US 5,943,55a A) as applied to claim 90 above, and further in combination with Michael (US 5,640,200 A).

Sumie as modified by Schemmel does not teach a size detector for determining whether a size of an anomalous region exceeds a predetermined allowable size.

Michael discloses a system in the same field of optical inspection (figure 7) and same problem solving area of determining defects in a difference image (see "difference image" at column 10, line 21) comprising the determination of a defect size within the difference image ("defect size" at column 15, line 60; "measuring ... area" at column 16, line 30; see equations 10a and 10b at line 45). Michael states that use of geometric criteria, such as size and area, impose "additional criteria to prevent false alarms" (column 15, line 58).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to impose size as a defect criteria as taught by Michael, for the determination of potential defects on a die as identified by the difference image of Sumie, in order to impose additional criteria for determining a defect to prevent false alarms, and the false determination of a defect in an otherwise good wafer die.

Response to Arguments

16. Applicant's arguments filed on September 8, 2003 have been fully considered but they are not persuasive.

Summary of Applicant's Argument: In Sumie, "an operator must perform the disclosed action" of "picking up an image of a portion of the surface of the semiconductor where there is not defect" at response page 8, lines 12-14. This argument is representative of all of the arguments against the Sumie reference at response pages 8-9.

Examiner's response: An "operator" is not required to select the reference. The word "operator", "user", "person", etc. are not even mentioned by Sumie.

From the Sumie reference properly construed and taken as a whole, the reference image is automatically determined by inspection, and at a "position" where no defects are detected. The examiner will develop this point immediately below.

Sumie teaches that a reference image must be stored in memory 3c of figure 6 (Sumie column 4, line 58) for subsequent comparison with an inspection image as described at column 5, lines 30-54. Later in the disclosure, Sumie teaches that the reference image may be obtained in different ways, including "picking up an image of a portion of the surface of the semiconductor wafer where there is no defect" (Sumie column 7, line 56). This is a direct quote from Sumie, so it is clear that the "reference image" stored in memory 3c for subsequent comparison with inspection images can be picked up directly from the semiconductor, and more particularly from a "portion" where there "is not defect".

The question then becomes "how" is "portion" that contains "no defect" determined; or how is it known that a certain portion of the semiconductor is defect free. It appears from the applicant's arguments that a "operator" (i.e., presumably a human operator) becomes involved to some degree. However, Sumie never mentions, suggests, or even alludes to an operator intervention.

Sumie answers the question of how is it known that a certain portion of the semiconductor is defect free. First, Sumie explains that given several dies, and not knowing which if any possess defects, a defective and non-defective dies can be determined through comparison at column 8, lines 46-60. The comparison is not performed by an operator, but rather by "apparatus A" (i.e., Sumie's system of figure 6) as described at column 8, line 46. Second, Sumie points out that once the inspection is complete, the "position" of defective areas is determined at column 8, lines 61-66. Finally, now that Sumie has explained how defects in dies can be determined without an initial reference image, and how the positions of defective or non-defective areas can be determined, Sumie states (column 9, lines 1-5):

> "when an image of the semiconductor wafer 1 in a position where no defect exists is further picked up to use as a reference image, the 'position including no defect' which is output from the defect inspection apparatus may be used for he image pickup operation as the position of the reference image."

Thus, once the position of a defect free area is determined, it can be used as a pointer to pick up a defect free image to be used as the "reference image".

In summary, it is the examiner's contention upon reading the entire Sumie reference and taking the various teachings of Sumie in proper context, the claim limitations questioned by the applicant are fully anticipated.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lee et al. (US 2004/0057611 A1), while not prior art, is pertinent as teaching the selection of a reference die by image subtraction.

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian P. Werner whose telephone number is 703-306-3037. The examiner can normally be reached on M-F, 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H. Boudreau can be reached on 703-305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian Werner
Primary Examiner
Art Unit 2621
April 19, 2004

BRIAN WERNER
PRIMARY EXAMINER